

### **REMARKS/ARGUMENTS**

The Examiner is thanked for his review of the pending application.

Claims 1-5, 7-17, 19-28 and 31-36 remain in this application. Claims 6, 29 and 30 have been cancelled without prejudice to the subject matter contained therein. Claims 1, 5, 7, 8, 28 and 31-36 have been amended to address the Examiner's Sections 101 and 103 rejections. Claims 37-40 have been added. No new subject matter has been added.

#### **A. BASE CLAIM AMENDMENTS**

Base Claims 1, 5, 8 and 28 have been amended to stress the optimized selection of offers, subject to conditions by more than one manufacturer and store constraints, for the generation of the event calendar. Given discussions with the Examiner and Applicants knowledge of the prior art, these amendments are believed to render all claims in a position of allowability.

In particular, Claim 1 has been amended to recite "an econometric engine including computer-readable code configured to model sales as a function of price to create a sales model, wherein the econometric engine includes an imputed variable generator for: imputing base price variable and promotional variable, wherein the sales model includes the imputed base price variable, and the promotional variable; a financial model engine including computer-readable code configured to model costs to create a cost model; a promotional engine coupled to the econometric engine, and financial model engine, the promotional engine including computer-readable code configured to receive input from the econometric engine and financial model engine, wherein the promotional engine analyzes a plurality of offers, a plurality of promotional events, conditions from more than one manufacturer wherein the conditions are requirements the more than one manufacturer places on at least one of the plurality of offers, and constraints from the at least one store to optimally match offers with promotional events to create a promotional event calendar subject to the conditions from the more than one manufacturer, and the constraints from the at least

one store, and wherein the constraints from the at least one store includes a linear constraint and a nonlinear constraint.”

Claim 5 has been amended to recite “creating a sales model for each product and wherein the sales model includes an imputed base price variable, and a promotional variable; creating a cost model; determining conditions from more than one manufacturer, wherein the conditions are requirements the more than one manufacturer places on an offer; determining constraints from at least one store, and wherein the constraints from the at least one store includes a linear constraint and a nonlinear constraint; determining the value of offers using the sales model and cost model; determining the value of promotional events using the sales model and cost model; and selecting combinations of the offers and promotional events by optimizing the determined values to create a promotion event calendar subject to the conditions from the more than one manufacturer and constraints from the at least one store.”

Claim 8 has been amended to recite “creating a sales model, comprising: creating a plurality of demand groups, wherein each demand group is a set of at least one product and wherein at least one of the demand groups is a set of at least two products; generating an equivalent price and an equivalized unit for each product of the plurality of demand groups using an equalizing factor; creating a sales model for each demand group and wherein the sales model for each demand group includes an imputed base price variable, the equivalent price, the equivalent unit and a promotional variable; and creating a market share model for each product in each demand group; creating a cost model; determining conditions from more than one manufacturer, wherein the conditions are requirements the more than one manufacturer places on an offer; determining constraints from at least one store, and wherein the constraints from the at least one store includes a linear constraint and a nonlinear constraint; determining the value of the offers using the sales model and cost model; determining the value of promotional events using the sales model and cost model; selecting combinations of offers and promotional events by optimizing the determined values to create a promotion event calendar subject to the conditions from the more than one manufacturer and constraints from the at least one store; and estimating net profit from the selected combination of offers and promotional events using the sales model and cost model.”

Lastly, Claim 28 has been amended to recite “modeling sales as a function of price to create a sales model, wherein the sales model includes imputing base price variable and promotional variable modeling costs to create a cost model; receiving cost model and sales model; receiving conditions from more than one manufacturer, wherein the conditions are requirements the more than one manufacturer places on an offer; receiving constraints from at least one store, and wherein the constraints from the at least one store includes a linear constraint and a nonlinear constraint; computing a score for each offer of the plurality of offers and each event of the plurality of promotional events, wherein each event include at least one type of promotional vehicle, and wherein each offer includes at least one promotional vehicle requirement; selecting a combination of offers from the plurality of offers, and events from the plurality of promotional events to form a subset of offers and events; reconciling the type of promotional vehicle with the promotional vehicle requirements for the offers and events within the subset of offers and events; and constructing a promotion calendar utilizing the subset of offers and events, and reconciled type of promotional vehicle and promotional vehicle requirements.”

Support for amendments to Claims 1, 5, 8 and 28 may be found at cancelled claims 29 and 30 as well as at page 127, lines 1-5, page 128, lines 20-22 and page 130, lines 17-21 of the specification as filed, which states in relevant part “Offers are deals that manufacturers or wholesalers offer to retailers as a means to induce them to promote their products in their stores... Conditions are requirements by the manufacturer or wholesaler that a retailer must meet to obtain the allowances. ... The promotional engine 2112 may use the demand equation, the variable and fixed costs, and the promotional events, offers, and conditions to generate a promotional event calendar (step 2332), which specifies a promotional event, offer and condition combination for a time period, by computing an optimal set of promotional events, offers, and conditions that meet the rules.”

In addition to the amendments to Claims 1, 5, 8 and 28, a number of substantive arguments are detailed below indicating Applicant traversals to the Examiner’s previous rejections.

**B. RESPONSE TO REJECTION OF THE CLAIMS UNDER 35 USC §101**

The Examiner rejected Claims 5-8, 11-14, 16, 17, 21-24 and 28-36 under 35 USC 101. Particularly, the Examiner stated that “based on Supreme Court precedent, and recent Federal Circuit decisions, § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing...In the present case, none of the method (process) claims transform subject matter to a different state or thing, or recite a sufficient tie to another statutory class of invention... (all system claims) are rejected under 35 U.S.C. 101 because it does not recite subject matter within one of the statutory classes.”

Applicants respectfully believe the Examiner mischaracterizes the base Claims 5, 8 and 28 in his rejection under 35 USC 101. In particular, Applicants believe that Claims 5, 8 and 28 are all tied to an apparatus as they are being “computer-implemented”. Thus, the process is tied to another statutory class and is an allowable process under 35 USC 101.

The Examiner, in his rejection, notes this tying to a computer; however, the Examiner disregards this, stating “[n]ominal recitation of a computer implemented method does not alone create a sufficient tie to a particular apparatus because all of the steps of the method may still be performed by a human, by hand, or by mental steps, or by using a computer for some nominal activity.” (Original Emphasis). However, Applicants note that it is well known by those skilled in the art of sales modeling for pricing optimization and promotion generation that vast quantities of data are collected and processed in order to generate accurate demand models. The sheer volume of data analyzed renders the task impossible for a human, or even large groups of humans, to perform by hand. Any situation where the volume of data and processing is reduced to levels that may be performed by humans would likewise reduce the quality of the models to such a degree that they would be unusable for predicting sales.

Thus, in this narrow field of sales modeling, in the manner claimed, the usage of a computer to perform data analytics is intrinsic. This in conjunction with the recitation that the method is

“computer implemented” is believed sufficient to ‘tie’ the process with an apparatus. As such, Claims 5, 8 and 28 are believed allowable and in allowable form.

Furthermore, regarding each of Claims 5, 8 and 28, a “promotion event calendar” is “created”. Applicants believe that the creation of a promotion calendar is a positive ‘transformation’ of underlying subject matter. The promotion events calendar itself, be it a hardcopy price printout or an electronic display of said calendar, is an article that has been generated (transformed) from raw data. This is a tangible and notorious physical transformation of a paper substrate, or electrical charges in a monitor. Moreover, invoices, price lists, databases, displays and ads are all transformed by the promotion event calendar. The amount of money generated by the business will also be altered by the promotion event calendar, which is an ancillary transformation.

Moreover, in the context of a computing system such as that described in some embodiments in the present specification, Applicants submit that a person of ordinary skill in the art would readily appreciate that practicable embodiments of the claimed invention would be conducted with the aid of a computing machine, such as a server. Such computing machines are commonly understood to have memory. Further, the operations recited in the claims clearly change the state of the underlying data since the cache, register, or other memory on which the data is stored must be transformed to have a different magnetic polarity, electrical charge, or the like depending on the technology that is used. These are real physical changes. Further, memory is a real physical article. As such, Applicants submit that the method claims perform a transformation under the “machine or transformation” test and thus qualify as patent-eligible subject matter.

In regards to the apparatus of Claim 1, and its dependent child claims, Applicants respectfully believe that the Examiner again mischaracterizes the scope and thrust of the claim. In particular, a series of ‘engines’ are disclosed in Claim 1. The Examiner jumps to the conclusion that “[e]ngines are portions of programs” and thus construes the claim as software per se. Applicants respectfully traverse this rejection in that claims are read in their broadest reasonable interpretation, and said “engines” may indeed include software, hardware or some combination of the two.

Moreover, even if one were to read the “engines” of Claim 1 to mean software only, there is mention that the system is “computerized” and “including computer-readable code”. Applicants

believe that this is sufficient language to indicate that the program is being executed by a computer, thereby rendering the invention a statutory class. As such, Claim 1 is also believed allowable for the above reasons.

### **C. RESPONSE TO REJECTION OF THE CLAIMS UNDER 35 USC §103**

The examiner has additionally rejected pending Claims 1-17 and 19-36 under 35 U.S.C. 103 as being unpatentable over Boyd et al. (US 7,072,848), in view of Dvorak (US 7,155,402), in further view of LoPresti (“New SPSS Missing Value Analysis Option”).

Applicants believe that the present invention is nonobvious over Boyd, Dvorak and LoPresti because the cited references neither teach nor suggest each and every element of claims 1-17 and 19-36.

“A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *Graham v. John Deere Co.*, 383 U.S. 1, 13 (1966). Further, “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” *In re Royka*, 490 F.2d 981 (C.C.P.A. 1974); MPEP 2143.03.

Applicants believe that there is no basis for an obviousness rejection. In response to this rejection, Applicants will provide a brief discussion of the prior art and discuss the specific rejections of related claims below.

#### **1. DISCUSSION AND CHARACTERIZATION OF THE CITED PRIOR ART**

The main reference relied upon by the Examiner in the rejection of the present invention is Boyd et al. Boyd discloses “a system and method for assessing a proposed promotion scheme in view of desired business goals.” (Emphasis Added). (See Column 1, lines 15 to 18). Boyd further discloses analyzing the promotion via “market response models”. (See Column 2, lines 18-29).

Thus, Boyd fails to generate a promotion calendar as claimed, but rather centers on the evaluation on promotions schemes that have already been generated. *Id.*

Dvorak, on the other hand, describes “adjusting a reference selling profile for a reference product” in order to determine product distributions to stores from a distributor. (See Column 1, lines 63-66; and Column 2, lines 41-51). In addition, Dvorak discloses a “Markdown Manager” capable of “creat[ing] an array of potential markdown scenarios, based on the allowed markdown levels and markdown dates.” (See Column 15, lines 56-67).

Lastly, LoPresti relates generally to “describe[ing] patterns of missing data”, “describe[ing] the data using univariate and multivariate statistics” and “creat[ing] a data set with imputed values for the missing data.” (See page 2, fourth full paragraph). LoPresti appears concerned primarily with data collected regarding a person, such as a survey. (See page 3, first full paragraph). In fact, such a data set generated by a survey appears required in the analysis provided by LoPresti in that the “responses” are split into “two groups.” *Id.* One group has missing data and the other does not. *Id.* Answers to the questions answered by both groups are compared for statistical differences to determine if the missing data is randomly distributed. (See page 2, last paragraph to page 3, first paragraph). Randomly distributed missing data may be dropped, while non random data is imputed via regression. (See page 3, second and third paragraphs).

## **2. NON-ANALOGOUS ART**

Applicants believe that all of the cited art is non-analogous art, and is thus inappropriate for use as prior art. This argument is made in addition to the distinguishing arguments found below.

The court has found “the similarities and differences in structure and function of the inventions to carry far greater weight” in determining if references are analogous art. *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973). As previously discussed, LoPresti teaches “describe[ing] patterns of missing data” and “creat[ing] a data set with imputed values for the missing data.” (See page 2, fourth full paragraph). Further, LoPresti appears concerned primarily with data collected regarding a person, such as a survey. (See page 3, first full paragraph).

Contrary, the present invention discloses **generation of sales models for a product given a demand group for the purpose of generating promotion event calendars**. See the Specification as filed at page 4, lines 10-15.

There appears no suggestion in LoPresti of being related in any way to price optimization, promotion event planning, or sales model generation. In fact, Applicants believe that the only similarity between LoPresti and the present invention is the fact that LoPresti includes the term “imputed”; however, this is the apparent end of any similarities. Even the data imputed in LoPresti (survey style raw data) differs from the “base price variable and promotional variable” that is imputed by the present invention. As such, rejections to Claims 1-17 and 19-36 are believed moot, and Claims 1-17 and 19-36 are believed allowable.

### **3. REGARDING BASE CLAIMS 1, 5, 8 AND 28**

Claims 1, 5, 8 and 28 have been rejected by the examiner in light of Boyd et al. (US 7,072,848), in view of Dvorak (US 7,155,402), in further view of LoPresti (“New SPSS Missing Value Analysis Option”). As Claims 1, 5, 8 and 28 are all base claims of similar thrust, Applicants have provided the arguments common to these claims together for the sake of clarity.

#### **i. Boyd Fails to Suggest Analyzing Manufacturer Conditions**

The Examiner rejected Claims 1, 5, 8 and 28 stating “Boyd et al. teaches ...analyzing a plurality of **offers** ... **conditions** from at least one manufacturer... See also column 11, lines 60- 67, column 14, lines 20-40, column 17, lines 10-30 and line 58, and column 20, lines 24-30, which discloses constraints at stores and manufacturers).” (Emphasis Added).

Applicants believe that Boyd discloses a number of constraints that the “user” (i.e., store) is able to configure; however, there is a definite lacking of a suggestion of manufacturer conditions. (See Column 14, lines 20-43; and Column 17, lines 10-30).

The Examiner in support for his rejection appears to believe an example where a manufacturer has “three types of incentives offered” is an example of manufacturer “conditions” as



claimed. (See Column 20, lines 23-25). Applicants believe this is a mischaracterization of Boyd, as these offered incentives are “offers” as claimed, not “conditions” as claimed.

Thus, the analyzing of manufacturer conditions as claimed is simply not found in Boyd. Base Claims 1, 5, 8 and 28 are believed allowable for at least these reasons. As such, Claims 2-4, 6-7, 9-17, 19-27 and 29-36, which depend therefrom, are likewise believed allowable for depending upon an allowable parent claim.

**ii. Dvorak Fails to Suggest Creating a Promotion Event Calendar**

The Examiner also rejected Claims 1, 5, 8 and 28 stating “Dvorak teaches creating a promotional event calendar for the chosen promotional, events (See column 3, lines 20-30, column 4, line 63-column 5, line 15, column 11, lines 40-55, which discloses a promotional event causal calendar displaying promotional events).”

Applicants agree that Dvorak sets up a “causal event calendar” from the “historical information” to “identify which promotional events occur”. (See Column 3, lines 19-25; and Column 4, lines 63-65). However, Applicants believe the Examiner mischaracterizes the ‘causal event calendar’ when rejecting Base Claims 1, 5, 8 and 28. Particularly, the “causal event calendar” of Dvorak is reactive to historic and future promotions. The existence of a planned promotion leads to the event being identified within the causal event calendar. In contrast, the claimed “promotion event calendar” schedules times, descriptions and locations for promotional events. This is the exact opposite of the causal event calendar of Dvorak.

Given that the ‘causal event calendar’ of Dvorak does not teach or suggest the claimed ‘promotional event calendar’, Base Claims 1, 5, 8 and 28 are believed allowable for at least these reasons. As such, Claims 2-4, 6-7, 9-17, 19-27 and 29-36, which depend therefrom, are likewise believed allowable for depending upon an allowable parent claim.

### **iii. LoPresti Fails to Suggest the Imputing Variables**

The Examiner also rejected Claims 1, 5, 8 and 28 stating “LoPresti discloses an imputed variable generator and imputing variable values in data sets when data is missing (See page 1, sections 1-2, and page 2, sections 1-2, wherein a data set is utilized for a study and missing data is imputed so the missing data can be replaced).”

Applicants agree that LoPresti discloses imputation of missing data in raw survey data. (See page 3, first full paragraph). In fact, as previously noted, such a data set generated by a survey appears required in the analysis provided by LoPresti in that the “responses” are split into “two groups.” *Id.* One group has missing data and the other does not. *Id.* Answers to the questions answered by both groups are compared for statistical differences to determine if the missing data is randomly distributed. (See page 2, last paragraph to page 3, first paragraph). Randomly distributed missing data may be dropped, while non random data is imputed via regression. (See page 3, second and third paragraphs).

However, the imputation of missing data in raw datasets is materially distinct from the generation of imputed variables, let alone specific variables such as a “base price variable and promotional variable” as in Claim 28. LoPresti, for all its interesting dialog regarding individuals reluctance to answer questions on sexual behavior, never touches upon anything more than imputation or very raw data in a format not utilized in the present invention. Further, there is no mention of product pricing, promotions or sales models in LoPresti.

Thus, Base Claims 1, 5, 8 and 28 are believed allowable for at least these reasons. As such, Claims 2-4, 6-7, 9-17, 19-27 and 29-36, which depend therefrom, are likewise believed allowable for depending upon an allowable parent claim.

### **4. REGARDING CLAIMS 20, 22 AND 24**

The Examiner rejected Claims 20, 22 and 24 stating that “Boyd et al. teaches conditions from the at least one manufacturer... [and] It would have been obvious to one of ordinary skill in the

art at the time of the invention to include in considerations of whether or not the manufacturer is providing competitor's their products.”

Applicants respectfully believe that Boyd does not disclose conditions from a manufacturer, as in Claims 20, 22 and 24. Further, given that Boyd fails to even suggest said conditions, Applicants likewise believe that conditions requiring “not providing a promotional event for a competitor’s product” are non-obvious.

In support of his rejection, the Examiner cited where Boyd considers utilizing “competitive information” in analysis of promotional schemes. Applicants believe mere “data identifying competitors” is distinct from, and unrelated to, manufacturer’s offers as in Claims 20, 22 and 24. As such, Applicants believe Claims 20, 22 and 24 are allowable.

#### **5. REGARDING CLAIMS 25 AND 26**

The Examiner also rejected Claims 25 and 26 stating “LoPresti discloses an imputed variable generator and imputing variable values in data sets when data is missing (See page 1, sections 1-2, and page 2, sections 1-2, wherein a data set is utilized for a study and missing data is imputed so the missing data can be replaced).”

As discussed previously, Applicants agree that LoPresti discloses imputation of missing data in raw survey data for a psychology survey tool. (See page 3, first full paragraph). However, the imputation of missing data in raw datasets is materially distinct from the generation of imputed variables, let alone specific variables such as a “base price variable and promotional variable” as in Claims 25 and 26.

LoPresti, as previously noted, never touches upon anything more than imputation or very raw data in a format not utilized in the present invention. Further, there is no mention of product pricing, promotions or sales models in LoPresti. Thus, Claims 25 and 26 are believed allowable for at least these reasons.

## **6. REGARDING CLAIM 29**

The Examiner also rejected Claim 29 stating that he “takes official notice that it is old and well known in operations research to use linear and non-linear constraints.”

Regardless of whether linear and non-linear constraints are well known in operations research, Applicants maintain a belief that the present invention is novel in allowing the stores to set both linear and nonlinear constraints. For example, all of the constraints listed in the disclosure of Boyd appear to be linear constraints. (See column 17, lines 10-32).

Given a lack of prior art on this limitation, or official notice directed to the specifics of a “store” providing both a linear and nonlinear constraint to a promotion event, Applicants believe Claim 29 is allowable.

## **7. REGARDING CLAIM 30**

The Examiner also rejected Claim 30 stating that “Boyd et al. teaches: computing a score for each offer of the plurality of offers and each event of the plurality of promotional events, wherein each event include at least one type of promotional vehicle, and wherein each offer includes at least one promotional vehicle requirement (See column 1, lines 60-67, column 2, lines 8-30, column 4, lines 63-67, column 5, lines 29-35, column 7, lines 1-25, column 13, lines 1-20, wherein promotional events are both financial and non-financial events and offers are the values of these event types. See also column 15, lines 1-20. See column 11, lines 20-35, column 21, lines 35-50, column 23, lines 20-26, which disclose vehicle considerations);.” (Emphasis Added).

Applicants respectfully traverse the Examiner’s rejection in that Boyd appears to fail to disclose “computing a score for each offer.” Moreover, the “offers” of Boyd fail to include a “promotional vehicle requirement.” Instead Boyd discloses producing a “value evaluation ... for [a] promotion.” (See Column 1, lines 60-63). This valuation is generated for the entire promotion. Nowhere in Boyd does there appear to be a score generated for the promotion event and offer separately as a step in this overall promotion valuation. Moreover, while Boyd appears to disclose

the existence of manufacturer “offers”, there does not appear to be promotional vehicle requirements associated with there offers as in Claim 30. (See Column 20, lines 23-25).

As a score is not generated for the offers in Boyd, and further in view that the offers in Boyd do not appear to include “promotional vehicle requirements”, Applicants believe Claim 30 is allowable over the cited prior art.

Moreover, given that the “offers” of Boyd do not appear to include “promotional vehicle requirements”, Applicants further assert that Boyd likewise does not perform “reconciling the type of promotional vehicle with the promotional vehicle requirements for the offers and events within the subset of offers and events” as in claim 30. The Examiner, in support of his rejection, cites multiple sections of Boyd associated with the definitions to the variables in the transformed “Attraction Model” and “Multiplicative Model”. (See Column 11, lines 20-35; Column 21, lines 35-50; and Column 23, lines 20-26).

Applicants respectfully submit that the citation of a number of variables in an equation which models responses to a promotion is dissimilar from and unrelated to “reconciling” in any form, let alone reconciling “promotional vehicle requirements” of an offer with the “promotion vehicle” of the event as in Claim 30. As such, Applicants believe Claim 30 is allowable over the cited prior art for at least these reasons.

## **8. REGARDING CLAIM 31**

The Examiner also rejected Claim 31 stating that “Boyd et al. teaches wherein computing the score independently computes a value of each offer and a value of each event.” Applicants respectfully traverse the rejection in that there appears no suggestion in Boyd to compute a score for “each offer” **independently** from “each event” as in Claim 31.

The Examiner again cites the “Evaluation Module” of Boyd in his rejection of the claim. (See Column 13, lines 1-20). However, the accesses the entire “promotion scheme” and evaluates the promotion scheme. *Id.* As this method for evaluation is not **independently** score offers and

events, as in Claim 31, the present invention is believed allowable over the cited prior art for at least these reasons.

#### **9. REGARDING NEW CLAIMS 37-40**

Lastly, Claims 37-40 have been added to recite “wherein the more than one manufacturer includes a plurality of manufacturers and wholesalers.”

Support for these added claims may be found at page 3, lines 19-21 of the specification as filed, which states in relevant part “Manufacturers and wholesalers often make offers to retailers. Offers are deals that manufacturers and wholesalers offer retailers as a means to induce them to promote their products in their stores.”

In sum, base Claims 1, 5, 8, 28 are believed to be allowable. Dependent Claims 2-4, 7, 9-17, 19-27, 31-40 which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent Claims 1, 5, 8 and 28 for at least the same reasons. Hence, Examiner's rejection of dependent Claims 2-4, 7, 9-17, 31-27 is rendered moot in view of the allowability of independent Claims 1, 5, 8 and 28.

Applicants believe that all pending Claims 1-5, 7-17, 19-28 and 31-40 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner. Applicants have authorized the commissioner via EFS to charge our credit card in the total amount of \$862.00 to pay for the RCE fee (\$810) and one additional claim fee \$52 (previously paid for 35 total claims; now have 36 total claims in this preliminary amendment). The commissioner is authorized to charge any additional fees that may be due to our Deposit Account No. 50-2766 (Order No. DEMIP006). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

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